

REMARKS/ARGUMENTS

The Office Action mailed March 4, 2003, has been received and reviewed. Claims 1, 3, 4, and 18 through 26 are currently pending in the application. Claims 1, 3, 4, and 18 through 26 stand rejected. The election of species requirements of May 3, 2002 and December 31, 2002 have been withdrawn, and the previous allowance of claims 3 and 4 has been withdrawn. Applicants have amended claims 1, 23 and 25, and respectfully request reconsideration of the application as amended herein and in view of the arguments set forth below.

Information Disclosure Statement(s)

Applicants note with appreciation the receipt of initialed copies of their Forms PTO-1449 and PTO/SB/08. In addition to the copies, it appears the original Forms PTO-1449 and PTO/SB/08 were also enclosed with the March 4, 2003 Office Action. For this reason, Applicants are returning to the Examiner what appear to be the original Forms PTO-1449 and PTO/SB/08 (enclosed), and have retained the copy for our files.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4), in that reference characters “202” and “200” appear to have both been used to designate one of the “plurality of conductors.” Applicants have revised FIG. 2 such that the lead line associated with reference numeral “200” more generally indicates the “lead frame 200.”

The drawings are also objected to under 37 CFR 1.83(a), in that they must show every feature of the invention specified in the claims. The Examiner states that the limitations of the species of claims 1 and 23 have not been shown in the drawings.

With respect to claim 1, the Examiner states that “a lead frame having a plurality of conductors and at least one alignment feature electrically isolated from the plurality of conductors;” “coupling at least some of the plurality of conductors to a semiconductor die;” and “removing the at least one alignment feature” are not shown in the drawings. Applicants submit herewith, new FIG. 9 which clearly illustrates the subject matter. The subject matter of FIG. 9 is

set forth in the as-filed specification including, for example, at page 4, lines 18-25, and page 10, line 20 through page 11, line 16. Applicants submit that no new subject matter has been added by the introduction of FIG. 9.

Furthermore, Applicants note that FIG. 4 shows a lead frame 420 having a plurality of conductors 430 and an alignment cut out 450 (e.g., an alignment feature) formed in the tie bar 424 of the lead frame 420. The plurality of conductors 430 are coupled with the semiconductor die 460 by way of wire bonds 480 and the tie bar 460 (and thus the alignment cut out 450) is electrically isolated from the plurality of conductors 430. (See, e.g., as-filed specification, page 9, lines through 27; FIG. 4).

With respect to the subject matter of “removing the at least one alignment feature,” besides being set forth in new FIG. 9, Applicants submit that such subject matter is also adequately depicted in FIG. 2 which illustrates an alignment tab 210 (e.g., an alignment feature) formed as part of the lead frame 200 and includes a “separation line 240” which “could be a perforated line, a fold line, or other [type] of structure or [line] of weakness which permit[s] removal of the alignment tab 210 from the lead frame 200.” (As-filed specification, page 8, lines 6-10; FIG. 2).

Similarly, Applicants believe that FIGS. 2-8 adequately depict the presently claimed invention set forth in claim 23. However, Applicants note that new FIG. 9 depicts a flow chart including the subject matter set forth in claim 23 of the presently claimed invention. Applicants, therefore submit that the drawings of the present application satisfy the requirements of 37 CFR 1.83(a) and respectfully request approval of the corrections to the drawings.

Applicants also submit herewith corrected formal drawings, under cover of a separate Transmittal of Formal Drawings and request approval thereof.

35 U.S.C. § 112 Claim Rejections

Claims 1 and 18 through 23 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make

and/or use the invention. Additionally, claims 1 and 18 through 23 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants respectfully traverse these rejections as hereinafter set forth.

Claims 1 and 18 through 22

Independent claim 1, as amended herein, is directed to a method of forming an integrated circuit package. The method comprises: forming a lead frame having a plurality of conductors and at least one alignment feature electrically isolated from the plurality of conductors; coupling at least some of the plurality of conductors to a semiconductor die; encapsulating the semiconductor die and a portion of the lead frame with an insulating material; and removing the at least one alignment feature subsequent the encapsulating the semiconductor die and a portion of the lead frame.

The Examiner states that the subject matter which includes “forming a lead frame having a plurality of conductors and at least one alignment features electrically isolated from the plurality of conductors” and “removing the at least one alignment feature” are not enabled. Additionally, the Examiner states that such subject matter is not adequately disclosed within the application so as to satisfy the written description requirement of 35 U.S.C. § 112, first paragraph.

With respect to enablement, the Examiner states that “the limitation, ‘a lead frame having a plurality of conductors and at least one alignment feature’ suggests that the lead frame, conductors and at least one alignment feature are integral” and, furthermore, cites page 3, lines 25-27, which states that “a conductive apparatus has an alignment feature integral therewith [and, in] one embodiment, the conductive apparatus comprises a lead frame and the alignment feature comprises an alignment tab.” The Examiner then states that the “means by which the alignment feature is made integral with and electrically isolated from the lead frame is not disclosed, and can not other wise be determined.” (Office Action, page 4).

With respect to enablement of the subject matter of removing the at least one alignment feature, the Examiner states:

Further, the specification discloses that the alignment feature is “removably coupled with the lead frame 200,” and, “[t]o remove the alignment tab 210 shown in FIG. 2, the alignment tab 210 is folded about the separation line 240. The alignment tab 210 is folded back over the separation line 240 until the material connecting the alignment tab 210 to the lead 200 is severed or disconnected.” However, the claims 1 and 23 limitation “removing the at least one alignment feature,” is not enabled because “the material [or means] connecting the alignment [feature]” is not disclosed, and cannot otherwise be determined. (Office Action, pages 4 and 5).

Applicants respectfully disagree with the Examiner’s position regarding enablement of claims 1 and 18 through 22 as hereinafter set forth.

With respect to the written description requirement, the Examiner states that the *combination* of the above recited limitations (i.e., an electrically isolated alignment feature and removal of the same) is not adequately described. Applicants respectfully disagree as set forth in detail below herein.

Applicants note that the standard for enablement is whether the as-filed disclosure contains sufficient information regarding the subject matter of the claims such that a person skilled in the art can make and use the invention without undue experimentation. (MPEP 2164.01). “A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (Fed. Cir. 1984).” (MPEP 2164.01). Furthermore, “[t]he test for enablement is whether one reasonably skilled in the art could make

or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation.” *United States v. Teletronics, Inc.*, 857 F.2d 778, 785, 8USPQ2d 1217, 1223 (Fed.Cir. 1988) (MPEP 2164.01). Applicants submit that the presently claimed invention as set forth in claim 1 is properly enabled by the as-filed disclosure.

The standard for compliance with the written description requirement is: “does the description allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed?” (*In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989)) (MPEP2163.02). Similarly, “to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, her or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed.” (MPEP 2163.02, citing *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 10 USPQ2d 1111, 1117 (Fed Cir. 1991)).

Turning first to the subject matter of “forming a lead frame having a plurality of conductors and at least one alignment features electrically isolated from the plurality of conductors,” Applicants submit that the as-filed specification adequately describes and enables such subject matter.

In discussing a known embodiment of the prior art, the as-filed specification first discloses an integrated circuit 100 having a lead frame 108 including a plurality of conductors 104 extending from the plastic packaging 106 to a molded carrier ring 110. “Prior to the trim and form stage, the lead frame 108 also has a lead frame rail 109” which includes a plurality of apertures formed therein for aligning the integrated circuit 100 with a test assembly 150. (As-filed specification, page 6, lines 19-28; FIG. 1). It is subsequently noted that such an integrated circuit configuration may be limiting with regard to the number of units which may be produced from a given lead frame strip. The as-filed specification further notes that, while the number of units available from a given lead frame strip may be increased by, for example, eliminating the carrier ring 110, such an approach requires that “the lead frames must be aligned using the plastic packaging” and that such a method of alignment “is difficult since the tolerance of the plastic

packaging 106 relative to the lead frame 108 is high.” (As-filed specification, page 7, lines 5-12).

In contrast to the prior art embodiment shown and described with respect to FIG. 1, the as-filed application sets forth an exemplary embodiment shown and described with respect to FIG. 2. The specification states that a “lead frame 200 has a plurality of conductors 202, where the conductors 202 are *not connected by a rail or outside frame*” and further includes an alignment tab 210 “disposed on a first side 204 of the lead frame 200 [which] extends from the side 204 to a length for coupling with a receiving member on testing equipment.” (As-filed specification, page 7, lines 20-24, emphasis added). It is clear that the exemplary embodiment shown and described with respect to FIG. 2 (as well as those which are described with respect to FIGS. 3 through 6 and 8) is discussing a lead frame which has already been trimmed and excised from an associated lead frame strip.

Thus, while the Examiner states that “the limitation, ‘a lead frame having a plurality of conductors and at least one alignment feature’ suggests that the lead frame, conductors and at least one alignment feature are integral,” it is clear that reference to a “lead frame” in the presently considered application may include a lead frame after trimming and excising the lead frame from an associated lead frame strip. As is recognized by those of ordinary skill in the art, subsequent a trimming and excising process, a lead frame generally comprises numerous components which may function independent of one another. Thus, while a selected component of a lead frame may be “integral” in the sense that it is formed as a part of the lead frame when embodied in a lead frame strip, and is also a part of the lead frame being incorporated into the overall integrated circuit (e.g., attached to the semiconductor die or encapsulated with plastic packaging), it may also be relatively independent with respect to other components of the lead frame in its function and its physical structure at a stage in the manufacture thereof which is subsequent any trimming procedure.

For example, while a lead frame includes a “plurality of conductors,” one of skill in the art will clearly recognize that, subsequent the trimming and excising of the lead frame from its associated lead frame strip, many of the conductors may be independent of each other in terms of

physical structure and/or electrical conductivity. FIG. 4 of the as-filed application shows just such an example. More specifically, the conductor pointed to by lead line of reference numeral 430 (FIG. 4) is both structurally and electrically independent from the conductors on either side adjacent thereto. Similarly, the tie bar 424 shown in FIG. 4 is considered to be "part of" (or integrally formed with) the lead frame while, subsequent to being trimmed, it is electrically isolated from the plurality of conductors. Moreover, with an alignment feature (e.g., cut out 450) being formed in such a component (e.g., in a tie bar 424), the overall lead frame can be formed to include a plurality of conductors and an alignment feature electrically isolated therefrom as clearly shown and described in the as-filed application. (See, e.g., as-filed specification, page 9, lines 5-26).

One of ordinary skill in the art, at the time the invention was made, would clearly recognize that the various components which make up a lead frame prior to its trimming and excising from a lead frame strip may become individual and independently defined components after such trimming is effected, although the collection of independent components is still defined as the "lead frame."

Thus, recognizing that many of the embodiments set forth in the as-filed application disclose lead frames which have been subjected to a trimming process, Applicants submit that the present application adequately enables one of skill in the art to practice the presently claimed invention as set forth in claim 1 with respect to forming an integrated circuit which includes a lead frame having a plurality of conductors and at least one alignment feature electrically isolated from the plurality of conductors.

With respect to the subject matter of "removing the at least one alignment feature," applicants note that the as-filed specification, referring to FIG. 2, expressly teaches the following:

In yet another embodiment, the alignment tab 210 is removably coupled with the lead frame 200. A separation line 240 is disposed between the lead frame 200 and the alignment tab 210. The separation line 240 could be a perforated line, a fold line, or other types of structure or lines of weakness which permit removal

of the alignment tab 210 from the lead frame 200. *A technician can then remove the alignment tab by folding the alignment tab 210 over the separation line. The alignment tab is folded, repeatedly, if necessary, over the separation line 240 until the alignment tab is severed or broken away from the lead frame 200. A cutting device could be used to remove the alignment tab 210 from the lead frame 200. A fixture for holding the cutting device could also be used to facilitate removal of the alignment tab 210.* (As-filed specification, page 8, lines 6-15, emphasis added).

One of ordinary skill in the art would clearly be able to practice the presently claimed invention of claim 1 without undue experiment by either folding the alignment feature about a separation line (perhaps repeatedly) or by use of a cutting device. Thus, the subject matter of “removing the at least one alignment feature” as set forth in claim 1 of the presently claimed invention is clearly enabled as required by 35 U.S.C. § 112, first paragraph.

Regarding the written description of the *combination* of forming a lead frame including an alignment feature which is electrically isolated from a plurality of conductors and the removal of such an alignment feature, Applicants note that the various embodiments set forth in the as-filed application are not mutually exclusive of one another and that one of ordinary skill in the art could reasonably include a specifically described feature from one disclosed embodiment with another of the disclosed embodiments.

Thus, it is perfectly reasonable that an alignment tab 210, such as shown in FIG. 2, may be utilized in place of an alignment cut out (350, 450 and 550). For example, in discussing the alignment cut out 350 shown in FIG. 3, it is expressly stated that “the alignment cut out could have other shapes and sizes such as holes, slots, etc. and still be considered within the scope of the invention. In yet another embodiment, the alignment feature could be a *protuberance* formed on one of the sides of the lead frame 300.” (As-filed specification, page 8, line 28 – page 9, line 2, emphasis added). One of ordinary skill in the art would clearly find that such a “protuberance” may include a removable “alignment tab 210” such as described with respect to the embodiment

illustrated in FIG. 2. Given the collective teachings of the as-filed application and, contrary to the Examiner's assertions, the application as filed describes the complete structure of the claimed invention and discloses relevant identifying characteristics sufficient to describe the claimed invention in such full, clear, concise, and exact terms that a skilled artisan would recognize that Applicants were in possession of the claimed invention.

Applicants, therefore, respectfully request reconsideration and allowance of claims 1 and 18 through 22.

Claim 23

Independent claim 23 is directed to a method of forming and testing an integrated circuit package. As amended herein, the method comprises: forming a lead frame having a plurality of conductors and at least one alignment feature electrically isolated from the plurality of conductors; coupling at least some of the plurality of conductors to a semiconductor die; encapsulating the semiconductor die and a portion of the lead frame with an insulating material; coupling the at least one alignment feature with a portion of a testing device; testing the integrated circuit package through at least some of the electrically coupled conductors; decoupling the at least one alignment feature from the portion of the testing device; and removing the at least one alignment feature subsequent the decoupling the at least one alignment feature from the portion of the testing device.

The Examiner states that claim 23 is not enabled, nor does the specification comply with the written description requirements, in accordance with 35 U.S.C. § 112, first paragraph. Specifically, the Examiner points to the subject matter of "forming a lead frame having a plurality of conductors and at least one alignment feature electrically isolated from the plurality of conductors" and "removing the at least one alignment feature" as not being enabled and, further, states that the combination of the same two limitations is not supported by the as-filed specification. Applicants respectfully traverse these rejections.

As set forth above with respect to claim 1 (which includes the same limitations at issue with respect to claim 23), the limitations of "forming a lead frame having a plurality of

conductors and at least one alignment feature electrically isolated from the plurality of conductors” and “removing the at least one alignment feature” are properly enabled and there is adequate support in the as-filed specification for the combination of such limitations.

With respect to the subject matter of an alignment feature formed in a lead frame which is electrically isolated from the plurality of conductors, Applicants note that, as set forth above, many of the embodiments disclosed by the as-filed specification refer to lead frames which have clearly been trimmed and excised from an associated lead frame strip. Furthermore, upon reading the disclosure of the as-filed application, one of ordinary skill in the art would recognize that, just as a given conductor or lead finger of a lead frame may be electrically isolated from another conductor or lead finger (when the lead frame has been trimmed and excised), so could an alignment feature be formed in another component of the lead frame (e.g., in a tie bar) which is electrically isolated from the plurality of conductors. (See, e.g., page 9, lines 5-26; FIG. 4).

Thus, recognizing that many of the embodiments set forth in the as-filed application disclose lead frames which have been subjected to a trimming process, Applicants submit that the present application adequately enables one of skill in the art to practice the presently claimed invention as set forth in claim 23 with respect to forming an integrated circuit which includes a lead frame having a plurality of conductors and at least one alignment feature electrically isolated from the plurality of conductors.

With respect to the subject matter of “removing the at least one alignment feature,” as set forth above, one of ordinary skill in the art would clearly be able to practice the presently claimed invention of claim 23 without undue experiment by either folding the alignment feature about a separation line (perhaps repeatedly) or by use of a cutting device. (See as-filed specification, page 8, lines 6-15). Thus, the subject matter of “removing the at least one alignment feature” as set forth in claim 23 of the presently claimed invention is clearly enabled as required by 35 U.S.C. § 112, first paragraph.

Regarding the written description of the *combination* of forming a lead frame including an alignment feature which is electrically isolated from a plurality of conductors and the removal of such an alignment feature, Applicants note that, as set forth above, the various embodiments

disclosed by the as-filed application are not mutually exclusive of one another and that one of ordinary skill in the art could reasonably incorporate a specifically described feature of one embodiment with another of the disclosed embodiments.

Thus, it is perfectly reasonable that an alignment tab 210, such as shown in FIG. 2, may be utilized in place of an alignment cut out (350, 450 and 550). For example, in discussing the alignment cut out 350 shown in FIG. 3, it is expressly stated that “the alignment cut out could have other shapes and sizes such as holes, slots, etc. and still be considered within the scope of the invention. In yet another embodiment, the alignment feature could be a *protuberance* formed on one of the sides of the lead frame 300.” (As-filed specification, page 8, line 28 – page 9, line 2, emphasis added). One of ordinary skill in the art would clearly find that such a “protuberance” may include a removable “alignment tab 210” such as described with respect to the embodiment illustrated in FIG. 2. Given the collective teachings of the as-filed application, those of ordinary skill in the art would clearly recognize that the Applicants invented the presently claimed invention.

Applicants, therefore, respectfully request reconsideration and allowance of claim 23.

35 U.S.C. § 102(e) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 5,728,601 to Sato et al.

Claims 3, 4, and 24 through 26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Sato et al. (U.S. Patent No. 5,728,601). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claims 3 and 24 through 26

Independent claim 3 is directed to a method of forming an integrated circuit package. The method comprises: providing a plurality of conductors and at least one alignment feature; coupling at least some of the plurality of conductors to a semiconductor die; and encompassing the semiconductor die, a portion of each of the plurality of conductors, and *substantially encompassing the at least one alignment feature with an insulating material.*

The examiner cites Sato as teaching a method of forming an integrated circuit package which includes: providing a plurality of conductors 24 and at least one alignment feature 23b; coupling at least some of the plurality of conductors to a semiconductor die 25; and encompassing the semiconductor die, a portion of each of the plurality of conductors, and substantially encompassing the at least one alignment feature with an insulating material 21. Applicants respectfully disagree.

Even assuming, arguendo, that the lead frame cutout 23b is an alignment feature (as it may be considered to simply be another of the plurality of conductors, being coupled to bond pads 26 of the semiconductor die 25 – see FIG. 5), the cut out is clearly not substantially encompassed by an insulating material. Rather, “the resin package body 21 is formed with a cutout region 21x in the bottom edge 21f to expose a lead frame 23” (col. 5, lines 26-29). The various drawings (e.g., FIGS. 4A, 5, 6A-6D, 7A-7C, 8A, 8B and 9) also depict the cutout in the resin package 21x to be configured such that the packaging material is substantially withdrawn from the lead frame cutout 23b. Clearly the resin package cutout 21x does not substantially encompass the lead frame cutout 23b but, rather, avoids encompassing the lead frame cutout 23b and is formed to create a relatively large area about the lead frame cutout 23b which is free of resin packaging material. As such, Applicants submit that claim 3 is clearly not anticipated by Sato.

Applicants further submit that claims 24 through 26 are allowable as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 25, Applicants submit that Sato fails to teach coupling a heat spreader to an external surface of the insulating material, forming at least one other alignment feature in the heat spreader.

Applicants, therefore, respectfully request reconsideration of claims 3 and 24 through 26 and allowance of the same.

Claim 4

Independent claim 4 is directed to a method of forming and testing an integrated circuit package. The method comprises: providing a plurality of conductors and at least one alignment feature; electrically coupling at least some of the plurality of conductors to a semiconductor die; encompassing the semiconductor die, a portion of each of the plurality of conductors, and substantially encompassing the at least one alignment feature with an insulating material; coupling the at least one alignment feature encompassed by the insulating material with a portion of a testing device; and testing the integrated circuit package through at least some of the electrically coupled conductors.

Applicants submit that Sato fails to teach substantially encompassing at least one alignment feature with insulating material. Rather, as set forth above with respect to claim 3, the resin package cutout 21x of Sato does not substantially encompass the lead frame cutout 23b but, rather, avoids encompassing the lead frame cutout 23b and is formed to create a relatively large area about the lead frame cutout 23b which is free of resin packaging material.

Furthermore, while the Examiner states that it is inherent that the integrated circuit be subjected to an operability test, Sato fails to teach the formation of an alignment feature as set forth in claim 4 of the presently claimed invention and, subsequently, coupling the alignment feature with a portion of a testing device.

Applicants, therefore, submit that claim 4 is clearly allowable over Sato and respectfully request reconsideration and allowance of the same.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 5,728,601 to Sato et al. and Further in Combination with U.S. Patent No. 6,420,195 to King et al.

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sato et al. (U.S. Patent No. 5,728,601), as applied to claim 4 supra, and further in combination with King et al. (U.S. Patent No. 6,420,195). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The 35 U.S.C. § 103(a) obviousness rejection of claim 4 is improper because the references fail to teach or suggest all of the limitations of the presently claimed invention and because the references actually teach away from the presently claimed invention.

Independent claim 4 is directed to a method of forming and testing an integrated circuit package. The method comprises: providing a plurality of conductors and at least one alignment feature; electrically coupling at least some of the plurality of conductors to a semiconductor die; encompassing the semiconductor die, a portion of each of the plurality of conductors, and substantially encompassing the at least one alignment feature with an insulating material; coupling the at least one alignment feature encompassed by the insulating material with a portion of a testing device; and testing the integrated circuit package through at least some of the electrically coupled conductors.

The Examiner relies on Sato as teaching the formation of an integrated circuit in accordance with the various limitations of claim 4, and then cites King as teaching the coupling of at least one alignment feature with a portion of a testing device and testing the associated integrated circuit through at least some of the integrated circuit's conductors. The Examiner then states that it would have obvious to combine the process of King with the process of Sato because it would enable package testing and improve manufacturing quality.

Applicants submit that Sato fails to teach substantially encompassing at least one alignment feature with insulating material. Rather, as set forth above, the resin package cutout 21x of Sato does not substantially encompass the lead frame cutout 23b but, rather, avoids encompassing the lead frame cutout 23b and is formed to create a relatively large area about the lead frame cutout 23b which is free of resin packaging material. Additionally, Sato teaches that "some of the bonding pads 26 may be connected to the lead frame parts 23a and 23e [which each include lead frame cutouts 23b] for the ground connection." (Col. 6, lines 8-9). The ground connection is clearly effected by coupling the lead frame cutouts 23b with the support leg 22 (See, e.g., col. 6, lines 10-11; FIGS. 5 and 7A). Thus, one of ordinary skill in the art would clearly not modify Sato so as to substantially encompass the lead frame cutouts 23b with insulating material as such a configuration would likely reduce, if not eliminate, the quality of any electrical connection between the lead frame cutouts 23b and the support legs 22 and thereby impair any grounding function effected by such a connection.

Similarly, one of ordinary skill in the art would not combine Sato with King as King appears to teach alignment features (50) which are molded directly in the packaging material and would not allow for a grounding connection which is desired by Sato.

Applicants, therefore submit that claim 4 is allowable over Sato and King, either considered individually or in combination, and respectfully requests reconsideration and allowance of the same.

ENTRY OF AMENDMENTS

The amendments to claims 1, 23 and 25 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1, 3, 4, and 18 through 26 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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Enclosure: Original Forms PTO-1449 and PTO/SB/08

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